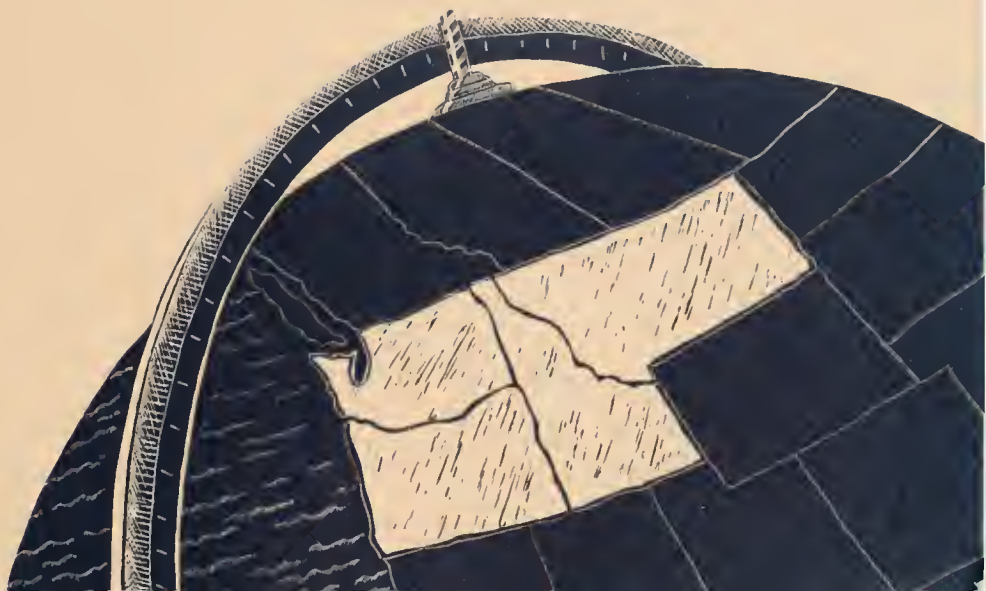


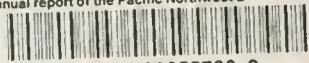
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NINTH ANNUAL REPORT
of the
Pacific Northwest Electric Power
and
Conservation Planning Council

*Submitted to the
Committee on Energy and Natural Resources
United States Senate
Committee on Energy and Commerce
United States House of Representatives
and the Committee on Interior and Insular Affairs
United States House of Representatives*

OCTOBER 1, 1988, THROUGH SEPTEMBER 30, 1989

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The Pacific Northwest Electric Power and Conservation Planning Council is an interstate compact among Idaho, Montana, Oregon and Washington, authorized by the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Public Law 96-501). It is funded out of electricity revenues collected by the Bonneville Power Administration, a federal agency that markets power produced in the Pacific Northwest.

Within this document, the Pacific Northwest Electric Power and Conservation Planning Council is referred to as the Northwest Power Planning Council or the Council. The Pacific Northwest Electric Power Planning and Conservation Act of 1980 is referred to as the Northwest Power Act or the Act.

This annual report has been developed pursuant to Section 4(h)(2)(A) of the Act. While the Act requires only a report of the Council's fish and wildlife activities, the Council has elected to include its power planning, congressional, public involvement, legal and administrative activities as well.

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Northwest Power Planning Council

October 1, 1989

To Members of Congress and the People of the Pacific Northwest:

This annual report, the ninth published by the Northwest Power Planning Council, details a year of change and challenge on the region's economic, energy and ecological scenes. How the Pacific Northwest responds will influence the economic health and quality of life in Idaho, Montana, Oregon and Washington well into the 21st Century.

The Northwest's energy outlook is changing. Where a few years ago the region produced a comfortable surplus of power, robust economic growth since then has consumed much of the excess.

That growth has been a welcome shot in the arm for the Northwest, whose economy spent the early 1980s mired in recession. But a smaller energy surplus creates new, unfamiliar pressures. The region in the 1990s no longer will have time on its side. It no longer will have the luxury of a substantial power surplus to postpone the day when it must commit to new sources of power or expanded conservation efforts. A smaller surplus compresses the length of time the Northwest will have to examine options and make resource choices.

Those power pressures come just as debate over the Northwest's ecological balance takes a new course. Three-quarters of the region's electricity comes from hydropower dams in the Columbia River Basin. While that energy has become the lifeblood of the region's economy, hydropower development has affected fish and wildlife throughout the area. In the 1980s, the region has wrestled with how to revitalize fish populations that were devastated by hydropower facilities. And as the 1990s open, the region also begins to address damage to wildlife populations and habitat done by those Columbia Basin dams.

These challenges reaffirm the role Congress foresaw for the Council in 1980 when it passed the Pacific Northwest Electric Power Planning and Conservation Act. That law calls on the Council to draw blueprints for the region's energy future that provide adequate electricity at the lowest cost and to rebuild fish and wildlife resources in the Columbia Basin.

This annual report outlines steps the Council took last year to help private, state and federal interests in the region prepare cooperatively for the new environment of the 1990s.

Sincerely,

The image shows two handwritten signatures in blue ink. The signature on the left is a stylized, cursive 'Tom'. The signature on the right is a more elaborate cursive signature, likely 'Tom Trulove'.

Tom Trulove
Chairman

INTRODUCTION

A new Northwest Power Plan and major new components of the Columbia River Basin Fish and Wildlife Program are the focus of the Northwest Power Planning Council's work as the 1980s come to a close. It has been a decade that began with huge wholesale electric rate increases fed by bills for nuclear power plants considered necessary to meet predictions of a regional electricity deficit. A recession in the early part of the 1980s, combined with rate increases, flattened energy demand so that, instead of deficit, by the mid-1980s the region faced a large and costly electricity surplus. Now, with a rebounding economy, the region has come full circle, and the surplus is declining rapidly.

But things are not back to where they were at the end of the 1970s. While once again the Northwest faces the need to make near-term resource decisions, it now has tools that weren't available 10 years ago to make those decisions.

These tools are the result of the Northwest Power Act of 1980, which authorized the states of Idaho, Montana, Oregon and Washington to enter into a compact to conduct regional electrical power planning in an open public forum. This forum is the Northwest Power Planning Council.

The Act set down guidelines for acquiring resources in a sequence that leads to adequate and reliable electrical power supplies at the lowest cost to the region. This concept has become known as least-cost planning, and—as of this year—three Northwest state utility commissions require their investor-owned utilities to submit least-cost plans patterned on the Council's Northwest Power Plan.

So far, the Council has completed two power plans. The last was published in 1986, and a supplement containing updated information on forecasts and resources was adopted this year. The Council expects to have a new draft Northwest Power Plan available for public review by summer 1990. This is prompted by a combination of new data, improved technologies and changing conditions—both within the Northwest economy and on the world scene.

“It's clear that as we enter the 1990s the time for action has arrived. The time for preaching and pleading has passed. Now, the region must agree on difficult policy choices and take decisive action.”

—Tom Trulove, Washington



The decade has been equally exciting for the changes taking place that will affect some of the region's biological resources. The Act that set up the Council as an electrical energy planning body also required the Council to give equitable attention to the impacts of hydroelectric development on the Columbia Basin's fish and wildlife.

At the beginning of the decade, the basin's annual salmon and steelhead runs were at an all-time low, an estimated 15 percent of the run size a century before. Throughout the 1980s, salmon and steelhead runs improved significantly—thanks in major

part to a treaty between the United States and Canada to limit ocean salmon harvests. But major efforts that complement the treaty also have been put in place through the Council's program.

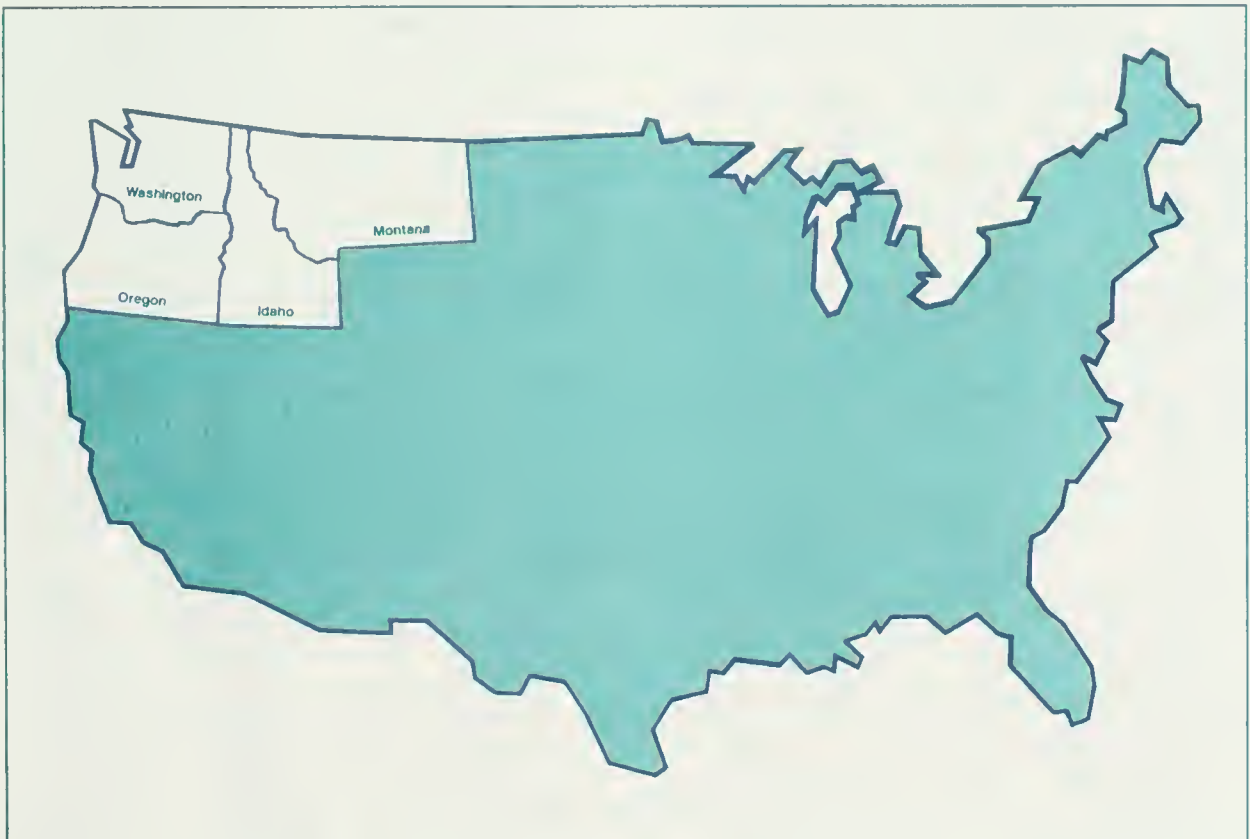
The Council has published three Columbia River Basin Fish and Wildlife Programs, with each subsequent edition adding measures designed to improve survival or increase production of fish and wildlife. Many of these measures have been implemented during the last decade. These include a water budget released during the spring migration to help juvenile fish migrate to the sea, an historic 10-year agreement signed this year to spill water to secure safe fish passage over the dams, additional work on fish bypass systems at a number of dams, hatcheries, habitat restoration, and research projects. The Council also has designated 44,000 miles of Northwest streams as areas to be protected from hydropower development because of their important fish or wildlife habitat.

As the decade ends, the Council is at work on two major new components of the fish and wildlife pro-

gram. With most previous efforts aimed at fish, the Council now is addressing ways to reverse or lessen damage to wildlife populations and habitat caused by hydropower projects in the Columbia Basin. The Council expects to adopt proposed wildlife amendments by the end of 1989.

The other major area of work involves developing a systemwide plan for 31 subbasins that make up the Columbia Basin. The objective of this plan is to produce an integrated program that will increase salmon and steelhead runs by 2.5 million fish.

This document gives more detailed descriptions of the work the Council—and the region as a whole—is doing. It is important to note the regional focus, because no single development marks the 1980s more than the growth in public participation in regional planning and the emerging cooperation among disparate entities. For the Pacific Northwest, the past few years have been substantially devoted to consensus-building rather than litigation. ■■



FISH AND WILDLIFE ACCOMPLISHMENTS

Populations of ocean-migrating fish in the Columbia River Basin appear to be rebounding from low levels 15 years ago. Chinook runs are well above the 10-year and historical averages for the third year in a row. And, while this year's estimated runs are down slightly from record runs in 1987 (138 percent of the 10-year averages) and 1988 (between 115 percent and 120 percent of the averages), the trend seems to point to improved runs for most salmon.

The Council remains concerned about summer chinook runs, which are down slightly from 1988; sockeye runs, which are down substantially from 1988; and winter steelhead populations in the lower Columbia. In fact, diminished runs forced authorities to forbid sockeye harvests in 1989.

Fisheries experts still are reluctant to claim that generally larger runs indicate the Columbia River Basin Fish and Wildlife Program is successful. Some observers assert that reduced harvests both inriver and in the ocean fisheries—a result of the U.S./Canada Pacific Salmon Interception Treaty and other management decisions—have meant that more Columbia River fish live to return upriver and spawn. Nonetheless, because of program efforts, the basin they return to is much more hospitable than the river they left. When their young emerge to ride the river back down to the sea, their journey will also be safer due to bypass improvements and other program efforts.

Improved Passage at Columbia River Dams

This year's successes include the signing, after 18 months of negotiations, of a long-term plan

to spill water at federal dams to aid young migrating salmon and steelhead. Termed the "10-year spill agreement," the plan was developed and approved by a remarkable coalition of state and federal fish and wildlife agencies, basin Indian tribes, utilities, the Bonneville Power Administration and the Council. It calls for specific spill levels to carry juvenile fish to the sea past Lower Monumental, Ice Harbor, John Day and The Dalles dams—all operated by the U.S. Army Corps of Engineers. So far, the Corps only has agreed to follow the spill regime for 1989.

The Council considers spills, which carry the fish over the dams through spillways rather than flushing them through deadly turbines, an interim measure until permanent bypass channels and screens are installed at these dams. Because the fish-laden water is dumped over the dams rather than run through turbines to generate electricity, spills are costly in lost power revenues. Depending on power prices and customer demand, spilling water costs the Northwest approximately \$15 million each year. Consequently, the Council and other interests in the region are pushing the Corps of Engineers to hasten plans to add permanent fish passage improvements.

In its 1987 program, the Council determined that these system corrections could be completed by 1994, at a total estimated cost of \$160 million. While that figure seems expensive today, the permanent fixtures will save the region's ratepayers millions more dollars in both power revenue and fish losses over the long term.

COLUMBIA RIVER ADULT FISH RETURNS

January 1–September 5
Bonneville Dam Counts

Stock	1989	1988	10-Year Averages
Spring Chinook	87,259	94,746	77,220
Summer Chinook	32,975	36,524	30,578
Fall Chinook	149,762	167,653	90,147
Sockeye	41,874	79,712	89,073
Steelhead	216,487	227,436	192,820

*Data compiled by U.S. Army Corps of Engineers

“A lot of the Council’s strength has been public participation, bringing diverse groups, interests and viewpoints into its policy-making process. That’s what happened this year when we brought groups together to forge the historic 10-year spill agreement.”

—Bob Saxvik, Idaho

The federal administration has not included funds for these efforts in its budget, despite the clear consensus in the region and the support of the U.S. Congress, which appropriated funds specifically for the bypass systems. Largely because of delays in funding, the Corps now says these changes cannot be completed until 1996, and that total costs will be higher than anticipated.

In 1988 and 1989, Congress included a total of \$18.3 million in its budgets for Corps’ work on six mainstem Columbia River dams.

The Corps is now spending that money as directed, but it has requested no additional funds to continue that work in its 1990 budget. However, last summer the U.S. House of Representatives and the U.S. Senate approved an appropriations bill that included \$9.9 million for fish bypass measures. (For

more discussion, see the section on congressional activities.)

A Safe Journey Down the River

In addition to spills and bypass systems, the Council’s program calls for a water budget—a special release of water from upriver dams on the Columbia and Snake rivers to speed the young fish through reservoirs. Before dams slowed the rivers, tiny salmon and steelhead caught the spring thaw and rode the runoff to the sea.

Fish attempting the same trip now may contend with slack water in as many as nine mainstem reservoirs. In addition, upstream storage reservoirs are used to hold runoff for use later in the year for power generation. This means the fish can be stuck in huge reservoirs that bear closer resemblance to lakes than to a river. Because the migrating fish undergo a carefully timed transformation that prepares them to live in saltwater rather than freshwater, their delay in reservoirs can be fatal. Their prolonged exposure to predators in the reservoirs also takes a high toll on their populations. Release of the water budget is scheduled to coincide with the bulk of the migration.

Unlike water conditions in the previous two years, 1989’s spring runoff was good, providing ample water on both the Columbia and Snake rivers to quickly move fish through the system. Fish and wildlife agencies and Indian tribes have expressed concern about possible future water-use conflicts caused by increasing sales of Northwest power out of region (consequently reducing flow levels) and the threat that in low-water years flows on the Snake River may not be provided. These problems are being discussed in the Mainstem Executive Committee—a group of policy level leaders of major fish and power organizations in the region chaired by the Council.

Some Columbia River fish are transported downstream in trucks and barges. In 1989, the Corps of Engineers shipped more than 15 million young salmon and steelhead around the mainstem dams, releasing them below Bonneville Dam. This is down from last year’s 20 million. To accommodate the anticipated influx of large numbers of fish produced through the Corps of Engineers’ Lower Snake River Compensation Plan as well as the fish and wildlife program, the Corps is adding two barges to its fleet. The Corps is expanding its

facilities and anticipates transporting 40 million to 50 million young fish in future years.

“The dams must be screened. The longer it takes to get the job done, the more money it costs and the more fish we risk losing forever.”

—Norma Paulus, Oregon

Fish survival rates from transportation appear to vary depending on species. Steelhead survival appears to be increased by their enclosed journey, while spring chinook have lower survival and return rates. Fisheries scientists continue to study the problem, because the reasons for the differing survival rates are not clear.

In November, the Council approved a plan to enhance flow conditions for fish in the Umatilla River. The plan called on Bonneville to pay to pump water from the Columbia River for irrigation, so more Umatilla River water, which would historically go to irrigators, is left in the river for fish.

Fish Production

There are fundamentally two ways to produce more fish. The first method is naturally, by clearing passage and restoring habitat so they can migrate into and reproduce in expanded areas.

The second method of producing fish is artificially, in hatcheries and other similar breeding facilities.

On the natural production side, approximately 30 sets of projects to open tributary passage and repair habitat for salmon and steelhead have been completed. Another 30 projects have been initiated. Pending the outcome of systemwide planning efforts (see below) many additional projects have been suspended.

These efforts have opened more than 1,000 miles of streams to migrants and repaired another 2,000 miles of habitat for wild fish and naturally spawning hatchery-reared salmon and steelhead. Work has covered parts of the Clearwater, Deschutes, Grand Ronde, John Day, Hood, Salmon, Umatilla, Wenatchee, Willamette and Yakima rivers.

In some basins, such as Oregon's John Day River Basin, restored habitat may be the key to preserving wild stocks of salmon or steelhead. The John Day is home to the Columbia River Basin's only exclusively wild runs of spring chinook and summer steelhead. These stocks are considered important insurance for the long-term survival of salmon and steelhead, because they carry genetic traits that have helped them adapt to some of the region's warmest water and most severe habitat problems. Someday, these traits could benefit other runs elsewhere in the Columbia drainage. Improving the John Day watershed and easing passage to it betters the chances salmon and steelhead will survive and the likelihood they will increase in numbers.

The fish and wildlife program also encourages artificial production opportunities for both ocean-migrating fish and non-seagoing stocks. Currently, an estimated 70 percent of the salmon and steelhead in the Columbia River Basin originate in hatcheries, and the Council recognizes that hatcheries are vital to rebuilding fish populations. Several hatcheries have been proposed, and one has been completed—the Cabinet Gorge kokanee hatchery in Idaho, which annually delivers about 20 million young fish to Idaho lakes. Several more are in various stages of design or construction.

Small-scale, low-cost fish collection, rearing, holding and release facilities are being developed in the Umatilla, Deschutes, Yakima and Klickitat watersheds, as well as on the Nez Perce Indian Reservation in Idaho. Construction of a hatchery in the Umatilla Basin, which should produce about 90,000 salmon and steelhead a year, is expected to begin in spring 1990. A brook, rainbow and cut-throat trout hatchery on the Colville Indian Reservation in northeastern Washington was completed in 1989.

Final design will be completed this fall on several kokanee hatcheries on Lake Roosevelt (above Grand Coulee Dam in Washington), which are expected to deliver 13 million young fish each year. Construction will begin next spring. The Colville Indian Reservation and Lake Roosevelt hatcheries are in areas blocked to migrating fish because of the construction of Grand Coulee Dam. The Council agreed to substitute non-seagoing, or resident, fish for the lost salmon and steelhead runs in this priority area.

Of equal priority are lost fish runs above Hells Canyon Dam in Idaho and eastern Oregon. Because this dam also cut off ocean-migrating runs, the Council determined that resident fish should be encouraged in this part of the Snake River. Several production projects are planned for this area, but they are on hold while the Council, the Bonneville Power Administration and others discuss who will pay to build and operate these facilities.

The final design for a major fish hatchery in the Yakima and Klickitat basins of Washington is expected next spring. The master plan for this facil-

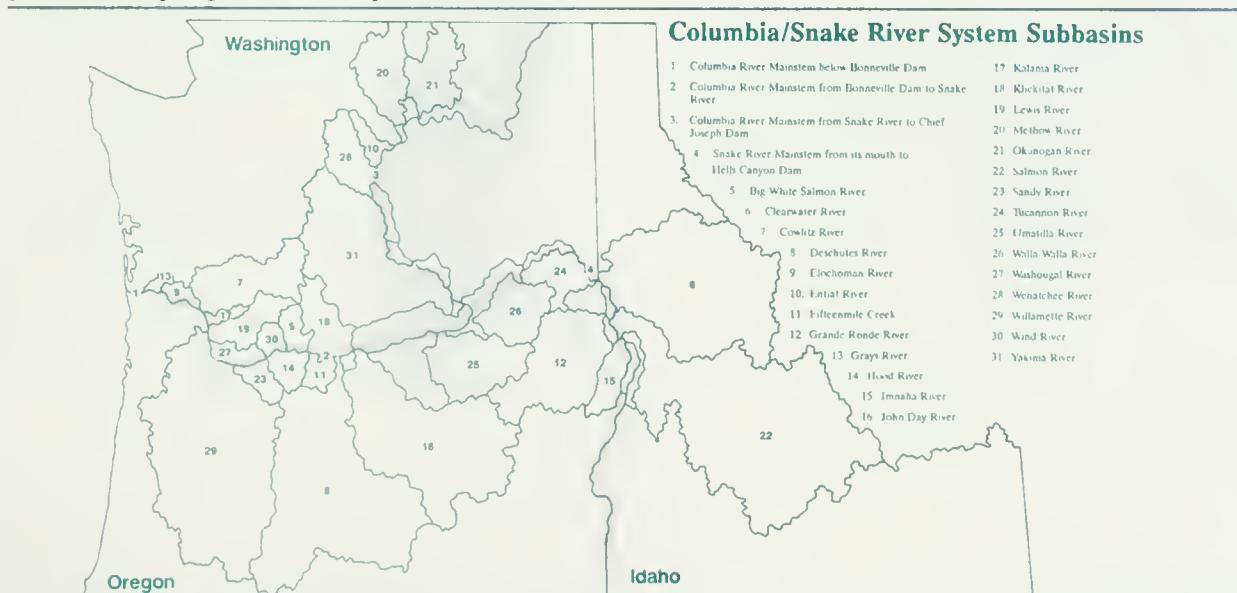
ity, which includes information about the kinds and numbers of fish expected, potential release streams for the fish and consequent effects in those streams of adding millions of new fish, has been submitted to the Council.

In addition, screens and fish ladders to afford fish safe passage into available habitat in the Yakima Basin are well under way. The first 20 of these projects are completed or very near completion. A second set of 53 projects has been approved for design, but actual construction has been put on hold until subbasin plans (see below) for the drainage are completed and approved.

Subbasin and System Planning

Draft plans that detail salmon and steelhead production potential for the 22 watersheds above Bonneville Dam have been completed and released for preliminary public review. Similar plans for basins below Bonneville Dam are expected this winter, with final plans for all 31 subbasins expected in early 1990.

These 31 plans will then be integrated into a complete Columbia Basin plan, called the system plan, which will cover each drainage plus factors that affect the total basin, such as ocean harvests and mainstem passage survival. The goal of this elaborate planning effort is to determine where salmon and steelhead can be produced, in what numbers and by what means. Because each watershed presents particular problems and opportunities, the planning has been broken down into specific subbasins, with local experts and advisory teams assembling details for each area.



Resident Fish

In addition to the resident fish production facilities described above, the Council's program supported research into factors affecting the sustainability of the basin's large and valuable sturgeon population. The Columbia River Basin's sturgeon runs are the second largest in the world, after the Soviet Union's. Dams blocked migratory paths of these enormous fish, but small groups survive in the lower river reservoirs, and a healthy run still feeds in the Columbia estuary.

In recent years, anglers have caught record numbers of these fish in the lower river. In fact, in 1987 anglers took in nearly twice as many sturgeon below Bonneville Dam as all other sport fish combined. Commercial harvesters also find sturgeon to be their most valuable catch on both a per-pound and a per-fish basis.

But research conducted pursuant to the Council's fish and wildlife program concluded that the Columbia's sturgeon population is in danger of being overharvested. Not enough breeding-size sturgeon survive harvest to reproduce. Fishery managers have consequently recommended limiting sturgeon takes to those fish 40 inches long or better, up to a maximum length of 72 inches. This measure should cut harvests by nearly 30 percent.

Wildlife

How much Northwest ratepayers should pay to reverse or lessen hydropower-related damage to wildlife populations or habitat is likely to be this year's controversy. In 1987, the Council approved and helped put in place two wildlife plans for Hungry Horse and Libby dams in Montana. It is reviewing proposals for wildlife lost at Grand Coulee and Albeni Falls dams in Washington, eight projects in the Willamette Basin in Oregon and plans for wildlife losses at the Palisades, Anderson Ranch and Black Canyon dams in Idaho.

“Working with all the parties in the Northwest, we can put together a reasonable program to protect and rebuild fish and wildlife that preserves our low-cost electricity.”

—John Brenden, Montana



The Council spent the first half of the year hearing comment from and consulting with interest groups on several policy questions regarding plans to improve conditions for wildlife affected by dams. Some parties questioned whether wildlife recovery measures could become too costly. And others questioned whether wildlife restoration should be the responsibility of ratepayers only, rather than shared among other dam users, such as irrigators and urban areas that benefit from flood control. Wildlife advocates pointed out that most wildlife losses have not been addressed since the federal dams were constructed.

In July, the Council entered rulemaking to amend wildlife portions of the fish and wildlife program. Public hearings were scheduled through-

out September in each state. A decision is anticipated this fall.

The Council's proposed rule addresses the net impact hydropower dams have had on wildlife in specific areas. Mitigation can involve reclaiming wildlife habitat that has been impacted. Mitigation also can entail acquiring new habitat to replace land that's been damaged.

Here are the highlights of the Council's proposed wildlife mitigation rule:

- ❑ The rule proposes that calculations of wildlife losses, at the dams listed above, made by state wildlife agencies and Indian tribes will be the starting point for mitigation efforts.
- ❑ The rule presents three alternative ways to calculate the share of mitigation efforts that electric ratepayers should pay and invites the public to comment on which formula the Council should choose.

One formula would calculate the ratepayers' share based on the percentage of a hydropower project's costs that are reimbursed to the federal government from power revenues. A second would calculate that share based on the percentage of a project's joint capital costs that are assessed to hydropower. A third method would be based on the percentage of a project's annual joint operating costs that are assessed to hydropower.

- ❑ The rule sets an interim goal over the next 10 years of mitigating up to half the damage hydropower dams have done to wildlife in the region.
- ❑ The rule establishes an advisory committee—chaired by Council staff and including members from representative agencies, Indian tribes, utilities and conservation groups—to set generic priorities.
- ❑ The rule sets procedures for future mitigation plans with heavy emphasis on public involvement.

Future Hydropower Development

In 1988, the Council voted to protect some 44,000 miles of prime Northwest fish and wildlife stream habitat from new hydropower development. In 1989, the Federal Energy Regulatory Commission (FERC) agreed that the fish and wildlife program qualifies as a comprehensive plan. Thus, the Council's call to protect important habitat will be carefully evaluated by FERC. The Council in 1989 made a few adjustments to the protected areas lists that corrected several technical oversights. It also took into account new information about several sites with pending Federal Energy Regulatory Commission applications, removing those sites from protected designation. ■■

POWER PLANNING ACCOMPLISHMENTS

The Pacific Northwest's electricity surplus dominated the region's energy environment in 1989, as it has for the last eight years.

But during 1989, that Pacific Northwest surplus—which has been shrinking since 1986—became more tenuous. The region's kilowatt cushion, comfortable a few years ago, has become thin. February's "Siberian Express" cold snap demonstrated just how vulnerable the Northwest's power system has become to a smaller surplus. That vulnerability appeared again during the summer of 1989, when cool, dry weather reduced the amount of water available for hydropower production and two nuclear power plants stayed out of service longer than expected. These factors forced the region to withdraw contract sales of electricity to California customers.

The time for action has arrived. The region no longer can count on the luxury of a long-term power surplus to postpone the day it will have to commit to new sources of energy. A smaller power surplus compresses the length of time energy decision makers have to examine their options and make resource choices.

Fortunately, the region has a mechanism in place to conduct that examination and make hard resource choices. The Northwest Power Act of 1980 called for the Northwest Power Planning Council to draft a comprehensive, 20-year power plan for the region. By following actions outlined in that energy blueprint, the Northwest can pick resources that are least costly and least disruptive to the region's economy and environment.

The sooner the region acts, the better prepared it will be to face the energy challenges of the next century. By following recommendations laid out by the Council in its regional power plan—recommendations that call for utilities in the next few years to take steps to acquire new sources of electricity—the Northwest can avoid having to make hasty, expensive resource decisions that could impact the region's livelihood and lifestyle for years to come.

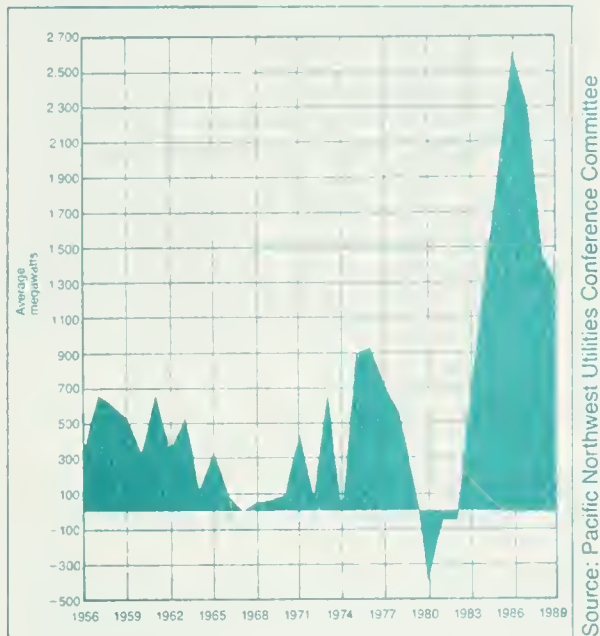
Actions are needed soon because of a rapidly changing energy scene. In contrast to the economic recession and low-growing energy demand in the early and mid-1980s, the Northwest's economy is rebounding and demand for electricity is jumping. At the same time, environmental concerns over global warming, acid rain and other matters mean that some long-term solutions power planners pointed to in the 1970s and 1980s might not be socially, politically or ecologically acceptable in the 1990s and beyond.

A shrinking surplus and a changing environment will play a large role in coloring the next version of the Council's Northwest Power Plan, expected to be completed in 1990. The goal of the Council's regional planning, spelled out by Congress when it authorized the Council in 1980, is to identify ways the region can obtain adequate supplies of electricity at the lowest cost over the next 20 years.

This will be the second time the Council has revised the regional plan completely. The Council first completed its plan in 1983. That version of the plan served as the region's energy blueprint until 1986, when it was supplanted by a second version accounting for rapid changes that had taken place in the regional, national and international economic climates. The Council partially revised the 1986 version last year, releasing a 1989 supplement that incorporated even more current economic analyses and assumptions.

According to the newest estimates in the 1989 supplement, the region's power surplus fell below 1,000 megawatts during the first part of 1989. That's less than half the 2,500-megawatt surplus the Council estimated the region had three years earlier. The supplement estimated the surplus next year at 400 megawatts to 800 megawatts.

Pacific Northwest Electricity Surplus/Deficit, 1956–1988



A smaller surplus and changing environmental concerns likely will have major implications for the timing and sequence of energy actions the Council has determined are most valuable for the region to make over the next 20 years. Those actions make up the Council's resource portfolio, which is a schedule of energy investments Bonneville and the region's utilities could make to satisfy growing demand at the lowest cost. The list is short if energy demand doesn't grow much, but lengthens as energy demand expands. It calls for the region's utilities to buy no new resources, except conservation, if the economy grows slowly, but to add to that resource base if the economy grows more quickly.

Conservation: Buying the Region Time

Conservation was the resource of choice when Congress wrote the Northwest Power Act in 1980, and it remains the preferred resource for the region today.

Conservation is the least expensive new resource available to the region, with costs half that of power from a new coal-fired plant. It's environmentally benign. It's easy to implement, and its impact grows as energy demand climbs.

Best of all, conservation can buy the region time. By making investments in conservation, the North-

west would postpone having to commit to more expensive, controversial or less environmentally benign resources and gain time to make more acceptable or less costly resource choices.

In this context, conservation means using energy wisely, being energy smart and energy aware. It means employing the latest cost-effective, high-tech solutions to saving energy. It does not mean lower thermostats, long underwear or sweltering summer office temperatures.

The Northwest already has become a national leader in pursuing conservation. Bonneville and the region's utilities have spent \$1.1 billion on a variety of conservation efforts since 1978. Of that total, some \$805 million bought nearly 350 megawatts of power, at an average cost of 1.8 cents a kilowatt-hour. The same amount of energy would have cost the region \$1.4 billion more if it had come from a new coal-fired electric plant.

Despite those strides, more opportunities exist to capture additional energy savings in the region, especially in the commercial and industrial sectors. Bonneville and the region's utilities need to spend more money on conservation efforts to obtain savings soon. The Council has expressed concern that the region does not have the capability to save all the energy available at competitive costs.

However, even if those expenditures are made, conservation won't be the sole answer to the region's growing energy needs under the most probable economic circumstances. If the Northwest's economy and energy demand grow at a fast pace over the next 20 years, the region could obtain as much as 2,540 megawatts of electricity from conservation measures.

That means conservation would meet only part of the Northwest's new power needs, under certain demand conditions. The Council predicts that under high-growth conditions the region will consume 29,200 megawatts by the year 2010, a jump of nearly 13,000 megawatts from its consumption level in 1988. Conservation would supply one-fifth of that growth in demand.

Conservation would supply about a third of the region's new power under medium-high growth conditions. In this economic scenario—which the Council considers to be more likely than the high-growth case—the Northwest's consumption would rise by more than 7,400 megawatts in the next 20 years, to 24,026 megawatts.

Conservation will be able to meet only part of the region's new demand for electricity. The Northwest needs to build a consensus on the resources that would meet additional needs.

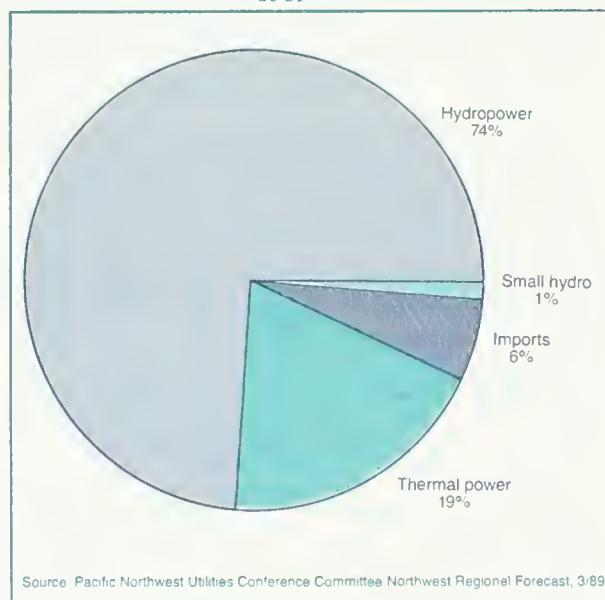
Hydropower: The Northwest's Energy Backbone

The Northwest's traditional resource base depends heavily on hydropower. About 74 percent of all the Pacific Northwest electric generating capacity comes from falling water. In fact, this region's hydropower dams produce 40 percent of the United States' total hydroelectric output.

Thermal generation from nuclear plants and from coal-, natural gas- and oil-fired power units accounts for 19 percent of the Northwest's electric capacity. Electricity purchased from outside the region and small power projects make up the remaining 7 percent of the Northwest's capacity.

That hydropower-dependent resource base has given the Northwest the lowest electric rates in the country. Low-cost hydropower also has made the Northwest disproportionately vulnerable to jumps in the price of electricity. The region has the highest per-capita electric use in the country—many Northwest residents have all-electric homes and many electricity-intensive industries are located in the region.

Pacific Northwest Electricity Generating Capacity 1989



For example, the Northwest hosts 10 large aluminum smelters, plants whose fortunes depend directly on strong primary metals markets and low electricity prices. When aluminum prices were high, demand steady and Northwest power inexpensive in the 1960s and 1970s, the plants thrived. But when the worldwide aluminum market nosedived just as wholesale power prices in the region soared 500 percent in the early 1980s, those plants retrenched or closed, throwing thousands of people out of work and turning some Northwest communities into near-ghost towns. Today they are rebounding and running near capacity.

Highlights of the Year

1989 Supplement to the 1986 Northwest Power Plan

In May 1989, the Council released its 1989 Supplement to the 1986 Power Plan. Product of more than a year's study, refinement and public review, the supplement reflects a growing sense of cooperation and accommodation among the Council, Bonneville, and the region's public and investor-owned utilities.

The supplement took shape after the Council and other parties realized that changes in economic conditions had made portions of the 1986 plan out of date. Rapid changes on the regional, national and international energy scenes have taken place since 1986. The Northwest's economy began its delayed recovery from the recession of the early 1980s. Aluminum prices rebounded during those years, spurring electric demand from the region's largest energy users. At the same time, the U.S. Department of Energy closed the Hanford Generating Project, a nuclear power plant in Washington, eliminating a source of 400 megawatts for the region several years earlier than anticipated.

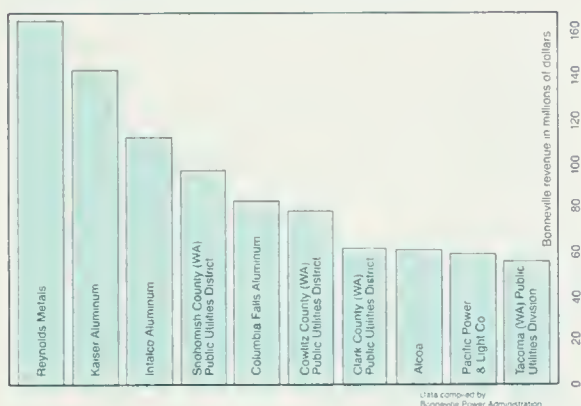
Additionally, in early 1986, oil prices plummeted by more than half, falling briefly below \$12 a barrel before rebounding to \$17.

As a result, the Council revised the 1986 plan using the most current economic data available. Like its predecessors, the supplement gives a range of forecasts for the demand and supply of electricity in the region over the next 20 years. Under assumptions of low economic growth, the Northwest

won't need any new generating resources. The Council predicts that in these circumstances the region's supplies of electricity will outstrip demand for the next two decades, and the four states still will have a surplus in 2010, perhaps as large as 2,000 megawatts.

However, the picture changes significantly if the region's economy remains healthy and it experiences medium-low to medium-high growth conditions. In these cases, the region needs to acquire new sources of power by 2004 and 1995, respectively.

Ten largest Bonneville Customers, 1988



Under robust, high economic-growth assumptions, the region needs new resources as early as 1992, and by 2010 it will need almost 13,000 additional megawatts of electricity.

This means that the region's load uncertainty—the difference between its power needs under the best and worst economic conditions—would be some 14,000 megawatts in 2010. The challenge for the Council will be to identify sufficient resources to meet 14,000 megawatts of load growth. The region will not have to build those resources—unless they are needed—but it does have to identify resources that best meet the tests of cost-effectiveness, reliability and environmental acceptability.

The 1989 supplement set a standard of cooperation for the 1990 Power Plan. The supplement grew out of a heightened spirit of collaboration among many utility and consumer interests in the Northwest. The Council worked closely with Bonneville and its direct industrial customers, public and investor-

owned utilities, environmental groups and others to shape and define many of the central issues in the supplement.

Conservation Report Card

Conservation is the resource of choice in the Northwest Power Act. The Act requires that the Council give priority to conservation when it assesses new resources, and to turn to renewable energy sources and waste heat before looking to other resources. The Act also considers conservation a wise investment even if it costs 10 percent more than the next most-competitive new resource because of its environmental acceptability, low cost and ease of implementation.

The Council in 1989 issued a comprehensive review of the region's success in pursuing conservation over the past eight years. While strides have been made saving energy in newly constructed residential structures, conservation in the Northwest's commercial and industrial sectors remains largely an untapped resource, the study concluded.

Since 1978, the Pacific Northwest has spent more than \$1.1 billion on a host of conservation efforts including research, marketing, builder training, promoting the implementation of stronger building codes and pilot projects. Bonneville's share of these conservation outlays was \$746 million through Fiscal Year 1988. Investor-owned utilities in the region spent \$330 million, while three public utilities in Washington contributed another \$90 million.

Some \$805 million of that spending saved the region 350 megawatts. But that savings represents only a portion of the power available from conservation at competitive, reasonable prices. If the region's economy experiences high growth over the next 20 years, the Northwest could plug into almost 2,540 megawatts from conservation. In other words, it could save enough energy to supply four cities the size of Portland, Oregon, at less than half the cost of power from new, coal-fired electric plants.

A large portion of that untapped potential lies in the region's commercial and industrial sectors. Since 1983, Bonneville and the region's investor-owned utilities have begun programs to encourage construction of energy-efficient new homes. To date, those programs have resulted in 13 percent of the region's new electrically heated homes be-

ing built to energy-efficiency standards drafted by the Council. However, similar efforts on the commercial and industrial side are in their infancy, and until they are in place the region loses opportunities to save energy in nearly every new structure built today.

Least-Cost Planning

Congress, in the Northwest Power Act, directed the Council to engage in planning that gives priority to cost-effective resources. By cost-effective, Congress meant that the Council must consider resources it predicts will be reliable and available when they would be needed. Those resources also must supply power as cheaply or cheaper than the least-cost similarly reliable, available and environmentally acceptable alternative or combination of alternatives.

Least-cost planning weighs the need for resources, their relative cost, reliability and availability. It requires that the region buy only resources it needs. When the region needs power, it should buy the lowest cost resources, counting all costs involved on a consistent basis.

The Council has become a national and international model for least-cost planning. Last year, three of the four state utility commissions in the Northwest formally adopted least-cost planning into their procedures, and all the investor-owned utilities in the region have drafted or are drafting least-cost plans. Similarly, all the major utilities in New England also are drafting least-cost plans. The Council has provided technical assistance for these efforts.

The Council's least-cost analytical tools have been used by planners in more than a dozen countries, including the Soviet Union. This year, the Soviet Academy of Sciences sought the Council's help in writing least-cost plans for two Soviet republics.

Model Conservation Standards

The Northwest Power Act directed the Council to draft model conservation standards the region could use to make its residential and commercial building codes and construction practices more energy efficient. The Council wrote those standards in 1983.

To date, more than 45 jurisdictions in the region have adopted the Council's standards, all the re-

gion's utilities run programs that encourage builders to erect energy-efficient structures, and Oregon and Washington have improved their state residential building codes to capture 50 percent to 60 percent of the potential savings outlined in the standards.

“Model conservation standards for new homes are the least expensive, quickest and most environmentally benign way the Northwest can get power.” —Ted Bottiger, Washington

The Council in 1989 worked with a broad coalition to support a bill that would have strengthened Washington's residential building code. That new building code would have brought the state's energy conservation regulations up to full compliance with the model conservation standards.

The measure, which in March 1989 passed the Washington House on a 96 to 0 vote, failed to reach the full Senate in the state's regular or special legislative sessions.

However, the bill was supported by a strong coalition of diverse building industry interests that included Bonneville, public and investor-owned utilities, natural gas companies, homebuilders, developers and local governments.

That coalition may re-introduce the bill during the 1990 session of Washington's Legislature.



Oregon, which is revising its building code administratively rather than legislatively, this year began to review its regulations, a process that it hopes to complete in 1992. By then, Oregon officials expect that new electrically heated homes built in the state will capture 85 percent of the energy savings outlined in the Council's standards.

In Idaho, the Council—working with utilities and other interested parties—helped the state legislature form an interim legislative committee on building codes and indoor air quality. The Council provides staffing support for the committee, which hopes to have building code recommendations ready for the next session of the legislature.

In 1989, the Council also revised portions of its model conservation standards relating to commercial structures. The revisions came about because new energy technologies, better data and five years of experience with the standards indicate the region could capture up to 30 percent more energy through commercial measures than the Council originally envisioned. That translates into a savings of 500 megawatts for the region, worth \$250 million to \$500 million.

The revisions mean that the Council's energy-efficiency standards match or better a similar standard being considered by the American Society of Heating, Refrigerating and Air-Conditioning Engineers. The revisions also expand programs run by utilities to demonstrate energy-savings technologies and designs that are commercially available but not yet widely adopted.

Joint Economic Forecasts

The Council and Bonneville for the first time issued joint economic and electricity use forecasts in November 1988. The two organizations developed coordinated forecasts of economic, demographic and energy demand trends in the Northwest. The forecasts formed the basis of the 1989 supplement's predictions of energy and economic performance in the Northwest during the next two decades.

The two also released in draft form a revised electricity use forecast in March 1989, and they continue close coordination of other forecasting efforts.

The Council and Bonneville intend to use the forecasts as a common basis for resource planning and analysis. The forecasts bracket the highest and lowest plausible economic and energy demand scenarios in the Northwest for the next 20 years.

Global Warming Conference

The Council, in February 1989, hosted a day-long seminar on global warming and its implications for power planning in the Northwest. National and international experts on global warming—including Michael Schlesinger, a world-renowned atmospheric scientist from Oregon State University; John Harte, of the Energy Resources Group at the University of California, Berkeley; and Gordon MacDonald, vice president and chief scientist of the MITRE Corporation—briefed the Council on aspects of the issue and potential policy choices for the region.

Participants explored the causes, effects, likelihood and timing of global warming. The seminar was designed to give the Council better information on which to base resource decisions.

New Issues for the 1990s

The Council's planning agenda is not static. The Council continues to point to opportunities the region has to obtain additional power from implementing cost-effective conservation measures, from better management of the existing hydropower system and from power exchanges between the Pacific Northwest and other regions. But as social and economic circumstances change, so do the issues that influence the Council's plans. In the 1990s, several issues that did not play a large role in the Council's early work will come to the forefront. Those issues for the 1990s include:

Bidding

As the industry enters the 1990s, increasing numbers of utilities are interested in buying energy from independent suppliers rather than their traditional practice of building new generating capacity on their own. These purchases would be made through competitive bidding.

Regulators in Washington recently adopted the region's first bidding rule. Puget Sound Power and Light Company is evaluating bids it received under this rule.

In addition, Bonneville is developing an approach to resource acquisitions, pursuant to the Council's 1986 plan, that focuses on bidding as the major way to obtain new resources.

Such a change from utility-controlled and operated power generation to independently supplied energy may have major implications for the costs and availability of some power supplies in the region. The Council released an issue paper on the subject in 1989 and intends to monitor developments in this area closely.

Regulatory Barriers

State regulatory practices in the Northwest and across the United States can discourage utilities from pursuing conservation measures aggressively. The Council in 1989 released an issue paper outlining how current regulatory and rate-setting practices favor electricity sales over conservation or energy-efficiency measures and how states may change their regulatory practices to encourage conservation efforts.

Some of the most innovative regulatory proposals try to uncouple utilities' earnings from the amount of power they sell, give them extra returns and tax credits for conservation expenditures or reward utilities for reducing customers' bills.

Such regulatory changes could play a key role in helping utilities meet the Northwest's energy needs over the next 20 years at the lowest cost. The Council intends to pay close attention to the issue.

Environmental Concerns

The Council will address how to reflect environmental costs in its power plans more accurately. The Council in July adopted a policy to incorporate the environmental costs of various resources into its decision-making. This policy will help the Council select resources for the resource portfolio. This portfolio illustrates the priority for acquiring least-cost resources in the Northwest under various load-growth scenarios. While the new policy incorporates previous environmental considerations, it gives more weight to environ-

mentally benign resources that are reasonably cost-effective. This could mean that resources with fewer environmental consequences could be given priority over or displace other, less expensive resources.

“With its history of environmental sensitivity, the Pacific Northwest has an opportunity in the 1990s to show the nation and the world that it can choose energy paths that are ecologically responsible as well as cost-effective and reliable.”

—Ted Hallock, Oregon

Canadian Power

Issues relating to the Northwest's continued purchase of power from Canada and to the coordinated operation of hydropower dams on both sides of the border also will color the region's power scene over the next few years.

A complex power sales agreement between the two countries expires between 1998 and 2003. Pursuant to a treaty between the United States and Canada, ratified in 1964, Canada agreed to build three storage dams in British Columbia, and allowed the United States to build a dam in northwestern Montana whose reservoir backs over the border. In exchange for building these three dams, Canada received half the new power generated in the United States, energy made possi-



ble by additional water stored behind the Canadian dams. Canada also received a direct payment of approximately \$64 million for half the flood control benefits of the dams.

When it signed the power exchange agreement, Canada didn't have a domestic market for its share of electricity. As a result, it sold that power to a consortium of non-federal utilities in the United States on a long-term contract. Under that sale, the power reverts to Canada 30 years after the completion of each Canadian dam, which went into service between 1968 and 1973.

This means that the Canadian share of the power can be recalled beginning in 1998. This share may amount to approximately 600 megawatts of firm energy, or 4 percent of the region's total load. The Council's plan currently assumes that power will not be repurchased by U.S. utilities.

Coordination Agreement

Separately, another agreement among most Northwest generating utilities—including Bonneville, the Corps of Engineers and the Bureau of Reclamation—that coordinates the operation of dams in the region will be up for renewal by 2003. Even though new agreements likely won't be signed for several years, the Council must monitor these developments and take them into account in its next long-term plan for the Northwest. ■■

CONGRESSIONAL ACTIVITIES

The Council's congressional activities in 1989 fall into four major categories: testifying before Congress; updating Congress on power, fish and wildlife issues in the Northwest; monitoring congressional activities that potentially affect the Council's responsibilities; and responding to requests for information from congressional offices and committees.

Fish and Wildlife Issues

The Council testified on the budget requests of five federal agencies that are responsible for implementing parts of the Columbia River Basin Fish and Wildlife Program. In April, the Council testified before the Energy and Water Development Subcommittees of the House and Senate Committees on Appropriations regarding the budgets of the U.S. Army Corps of Engineers, the Bureau of Reclamation, the Bonneville Power Administration and the Federal Energy Regulatory Commission. The Council also submitted testimony to the Commerce, Justice and State Subcommittees on Appropriations in the House and Senate regarding the budget of the National Marine Fisheries Service.

The Council's testimony focused primarily on the Corps of Engineers' budget and spending on new and improved fish bypass screens and related facilities at the Corps' Columbia and Snake rivers dams. These facilities will divert young salmon and steelhead migrating to the ocean away from deadly turbines and reduce fish deaths at the dams by roughly 50 percent. The Corps' budget request for next year proposed only \$4.8 million to continue studies on the fish screens at Bonneville Dam's second powerhouse. This limited budget request would not fund continued design, testing and construction of critical fish bypass and complementary transportation facilities at the other six federal mainstem dams.

In conjunction with efforts to complete mechanical bypass systems, the region has agreed to a long-term spill agreement that calls for continued spills

for fish until mechanical bypass systems are installed and operating properly. This interim spill measure does not protect fish as well as bypass systems do, and it causes Bonneville to forego power it could generate if the water went through the turbines. This agreement also provides for additional levels of spill if installation of the bypass system is delayed.

The Corps has not included enough money for bypass facilities in its last five budget requests. Consequently, in each of those years, Congress has added funding for the fish bypass program to the federal budget. In 1988 and 1989, Congress added a total of \$18.3 million for bypass facilities at six mainstem dams. The final 1989 appropriations bill contains a provision directing the Corps to use funds that were approved by Congress for 1988 and to spend an additional \$9.6 million in 1989 for the fish bypass program. Those funds are to be used as soon as they are available.

Congress allocated the additional funds for improvements at Little Goose, Lower Monumental and McNary dams, and for new facilities at Ice Harbor, Lower Monumental and The Dalles dams. After some initial delays in allocation of these funds, the Corps is spending the money as directed by Congress in the 1989 appropriations bill.

In 1987, the Council helped develop a consensus among private and public utilities, Indian tribes, fish and wildlife interests, and the Bonneville Power Administration on the need to complete quickly bypass improvements at Little Goose, Lower Granite, McNary and Bonneville dams and to build new facilities at Ice Harbor, Lower Monumental and The Dalles dams. This regional consensus set up a schedule to complete these facilities by 1994.

But that schedule won't be met, in large part due to delays in funding and the federal administration's reluctance to release appropriated funds. Based on the Corps' estimates, those projects won't be finished before 1996, at the earliest.

“Consensus-building is what the Council is all about. To meet the challenges of the 1990s, utilities, customers and interest groups in the Northwest must work together, not independently.”

—Jim Goller, Idaho

To continue progress on bypass facilities under the new schedule, the Council indicated that Congress would need to add \$9.9 million to the 1990 budget request. In testimony before Congress, the Council requested that the appropriations process in 1990 include the same kind of direction to the Corps as provided in 1989 to ensure obligations of appropriated funds for the bypass program. In separate actions, the House and the Senate fully funded that approach last summer.

In testimony before Congress, the Council also opposed budget cut proposals affecting the National Marine Fisheries Service's operations budget for 25 hatcheries in the Columbia River Basin. The Council noted that these hatcheries account for half the basin's salmon and steelhead production, annually releasing 100 million juvenile salmon and steelhead into the Columbia system.

On the Bureau of Reclamation's budget, the Council reaffirmed its commitment to the Yakima River Basin as a high priority for fish enhancement projects in the Columbia River Basin. The Council testified in support of the budget request, which will complete construction of Phase I of the Yakima fish passage facilities and continue the

Yakima water enhancement project studies. Congress later approved that requested budget item.

On the other hand, the Bureau requested no funds in its 1990 budget to construct the recently authorized Umatilla Basin project. The Council indicated support for additional funds to begin construction on the project. In addition, the Council asked Congress to allocate some \$75,000 to \$100,000 within the Bureau budget to operate and maintain pumps that would continue to augment interim flow for fisheries in the Umatilla River Basin. Congress later approved \$650,000 to initiate construction on the project.

The Council has followed closely the development of legislation to authorize water resource projects in the Northwest. For example, the Council testified last year before the Senate Committee on Energy and Natural Resources in support of a bill authorizing construction of the Umatilla River Basin Project. This legislation was adopted and signed into law early in Fiscal Year 1989. In addition, the Council has been active in discussions on legislative proposals to promote a comprehensive program for the heavily used water resources in the Yakima River Basin.

In addition to formal contacts with Congress, such as testimony before specific committees, the Council also provides information on a range of fish and wildlife issues and on its recent progress in implementing its program. One of the most controversial issues the Council has addressed is the plan to protect from hydropower development certain rivers or river segments in the Northwest. Congress has displayed a strong interest in this protected areas issue. There is also strong public interest in the Council's process to develop a wildlife mitigation program, as called for in the Northwest Power Act. The Council has endeavored to keep the Congress fully informed of every development on wildlife mitigation and protected areas, as well as other issues facing the region.



Power Issues

In 1988, the Council also testified before the Energy and Water Development Subcommittees of the House and Senate Committees on Appropriations about the Bonneville Power Administration's proposed budget. Bonneville is the prime implementor of the Council's power plan.

The Council strongly opposed one provision in the budget proposal. The budget submission included an old proposal to alter Bonneville's approach to repaying its debt for construction of the region's hydropower system. Bonneville's repayment would be accelerated and the interest rates on unpaid debt would be allowed to vary from year to year. Under the proposal, Bonneville estimated that the wholesale rate could be 40 percent to 60 percent higher than current rates. The Council testified that a rate increase of this magnitude would damage severely the economic recovery underway in the Northwest. Congress dropped this short-sighted proposal from the budget.

The Council testimony also supported higher funding levels that would allow Bonneville to continue to develop the capability to deliver conservation resources in all sectors of the region's economy. Such an effort would help ensure that all cost-effective conservation resources would be available when needed by the region. Because full-scale programs require long lead times, the Council is particularly concerned about projected budget levels. Accordingly, the Council indicated that it will continue to work with Bonneville on a long-term plan that provides adequate support for lost-opportunity resources and capability building activities in the commercial and industrial sectors, particularly in future budget proposals. During the

appropriations process, Congress directed Bonneville to increase its support for conservation efforts over the next two years, so that in Fiscal Year 1992 it will be able to operate programs designed to capture all cost-effective lost-opportunity resources.

The House Subcommittee on Energy and Power asked the Council to submit comments on the Council's least-cost power planning process. The Council explained the role of conservation in least-cost planning in the electric utility industry and outlined the benefits of regional planning and of least-cost plans, particularly in areas where power grids serve more than one state.

During the year, the Council responded to requests from and provided background information to congressional offices. For example, in response to congressional interest in a regional viewpoint, the Council provided information on appliance efficiency standards and the implications of global warming for power planning. The Council's assistance also included providing general publications, including issue papers, background material and power plan proposals. ■■

PUBLIC INVOLVEMENT ACTIVITIES

During this year, the Council worked to refine and expand its public involvement program. More meetings were held with a wider variety of groups than ever before. Groups that routinely follow the Council's work were asked for suggestions for improving the Council's process and their ideas were acted upon. Groups that were new to the Council's work were contacted and encouraged to participate in the Council's activities.

The Council's Public Involvement Philosophy

The Council takes its public involvement obligation seriously. Not only does the Northwest Power Act mandate that the Council carry out a public involvement program, but the Act repeatedly emphasizes the need for broad public participation in Council activities.

The Council is able to carry out its extensive public involvement activities because of a commitment at all levels. Much of the public outreach is conducted through the state offices, which provide an important local contact. Council members and their staffs maintain contacts with organizations within their states and hold meetings and briefings for groups, members of the media and private citizens. Some states publish newsletters, have regular mailings or meet frequently with constituents to keep the state's citizens informed on how regional Council issues affect their individual state.

The Council makes an effort to be easily accessible. In addition to having at least one office in each state, the Council invites both oral and written comment. Comments are accepted in a variety of forms, ranging from testimony at meetings to handwritten letters or calls on toll-free phone lines.

“Power planning has to reflect the interests of all customer groups in the region: residential consumers, farmers, commercial and industrial users. As planners, we should make sure those needs don't conflict.”

—Stan Grace, Montana

Highlights of the Year

1989 Supplement to the 1986 Northwest Power Plan

The Council adopted a supplement to the 1986 Northwest Power Plan in March 1989. The supplement contains an updated forecast and discussion of resources. Public involvement in the updating process began in 1988 with several staff issue papers. After extensive comment on these papers, the Council's staff published a draft update for additional public comment.

Most commentators agreed that the demand forecasts and technical underpinnings of the power plan should be brought up-to-date in a supplement. Many parties, especially utilities, believed that major policy issues should be identified in the supplement. But they also felt that in-depth discussion on these issues should be



deferred to allow more time for regional review. When the Council adopted the supplement, the parties agreed that the region would discuss these issues over a longer time span.

As a result, the Council issued a revised draft supplement for comment in November 1988. After public comment and hearings in the four states, the Council adopted the supplement, and turned its attention to addressing major issues in a new power plan, expected out by the end of 1990.

1990 Power Plan

In adopting the supplement, the Council started a process to determine the most prudent selection and scheduling of new resources for the Northwest. It anticipates that this information gathering, analysis, evaluation and public involvement will lead to the release of a draft power plan during the summer of 1990.

To begin this process, and ensure that its public involvement program will be effective, the Council chairman and staff met with representatives from groups that will be most involved in developing the new plan. These parties, which ranged from environmentalists to utilities, suggested ways to improve the Council's public involvement efforts. The Council already has acted on some suggestions, including publishing issue notices and consulting with interested parties before developing issue papers.

Wildlife

One of the Council's major public involvement efforts this year has been dealing with wildlife mitigation. In the previous fall and winter, the Council sought public comment on an issue paper that discussed several wildlife mitigation proposals developed by fish and wildlife agencies and tribes. The paper described these plans and explored whether to establish regional goals and objectives for the wildlife program. It also looked at the potential cost of the program, ratepayers' responsibilities in the program and the pace at which to implement wildlife projects.

After it analyzed that public comment and the information received, the Council held three workshops with policy-makers from utility, fish and wildlife, environmental and local governmental organizations. In addition, Council members and staff met with various groups to get their impressions of the proposals being considered.

The process culminated in summer 1989, when the Council entered rulemaking to amend wildlife portions of the fish and wildlife program. The Council scheduled hearings in September 1989 in each state, and it anticipates it will formally amend the program by the end of the year.

Amendments

In addition to the supplement described above, the Council dealt with smaller amendments to the Northwest Power Plan and the Columbia River Basin Fish and Wildlife Program this year. For each of these, staff met with interested parties, and took public comment in writing and at hearings in each of the four Northwest states. The amendments included:

- ☐ a proposal to fund pumps that would increase water flows in Oregon's Umatilla River, thereby improving salmon and steelhead runs in the river (fish and wildlife program);
- ☐ an agreement among state and federal fish and wildlife agencies, Indian tribes, the Bonneville Power Administration and Northwest utilities to spill water at mainstem dams as an interim measure pending the installation of permanent bypass facilities (fish and wildlife program);
- ☐ an accelerated design process of the Phase II fish passage projects in Washington's Yakima River Basin to take advantage of the design team that worked on Phase I of the project (fish and wildlife program);
- ☐ a revision of the model conservation standards for new commercial buildings (power plan); and
- ☐ corrections of technical errors in the Council's protected areas designations (fish and wildlife program and power plan).

Conferences and Seminars

In February, experts from around the United States briefed Council members and the public on the much-publicized phenomenon known as global warming and its possible effects on the Pacific Northwest. This seminar focused on the causes of global warming, its effects and the probability of its occurrence and timing. Possible actions that could be taken in the Pacific Northwest to control or lessen global warming also were discussed. The seminar was co-sponsored by the Oregon Department of Energy, the Washington State Energy Office and Battelle Pacific Northwest Laboratories. Transcripts and a videotape of the event are available from the Council's public involvement division.

The Council also co-sponsored several conferences designed to educate Northwest citizens on issues facing the region. These included the following:

- In December 1988, the third annual Electricity Futures Symposium—"Energizing the Northwest: Building Efficiently toward Tomorrow"—was held in Portland, Oregon. This symposium dealt with the Northwest's efforts to encourage energy-efficient housing in the changing national and international energy environments. It was sponsored by the Bonneville Power Administration and the League of Women Voters of Oregon, in addition to the Council.
- A symposium was held in March on the Columbia River Treaty between the United States and Canada and the power sales agreements that have provided Canadian energy to the Northwest for nearly 30 years. The symposium was designed to inform decision-makers on the history and present status of these issues, and to frame questions that need to be resolved. In addition to the Council, sponsors of this symposium were B.C. Hydro, the Bonneville Power Administration and the League of Women Voters of Oregon.
- The RETSIE '89 symposium (Responsive Energy Technologies Symposium and International Exposition) was held during June in Santa Clara, California. The symposium emphasized energy efficiency, facilities management, environmental effects, renewables and national energy policies.

Finally, the Council plans to hold the second annual "Salmon and Steelhead Round Table" in October. The discussion will bring together regional and national policy leaders in a public forum to evaluate progress on fish and wildlife protection and enhancement and to identify actions needed in the future.

National and Worldwide Interest

The Council's work has generated much interest in the United States and abroad. Council members and staff have appeared before Congress, state legislative committees, public utility commissions and at several conferences in Canada and the United States to testify or present papers on the region's pioneering efforts in least-cost energy planning and fish and wildlife protection. Articles about the Council's work have appeared in a wide range of periodicals, including *Sunset*, *Civil Engineering*, *Resources (Resources for the Future)*, *Independent Energy*, *Alternative Sources of Energy*, *State Government News*, *The Electricity Journal*, *The Ruralite* and *Environment*.

The Council's executive director has served on a state and regional planning committee formed by the National Academy of Sciences. During the year the committee prepared a methodology for a national least-cost energy plan. A draft of that methodology is under review by the Academy's energy engineering board.

The Council in August testified before Department of Energy Secretary James Watkins on least-cost planning and energy forecasting. The testimony will help the federal government derive a national energy policy in 1990.

This year, the Council continued its exchange program with the Soviet Union. Two regions in that country, Belorussia and the Crimea, face impending energy shortages and are experiencing substantial public opposition to nuclear power. They have chosen to pioneer least-cost planning techniques and have requested assistance from the Northwest Power Planning Council.

In May, in an exchange sponsored by the Council, the Natural Resources Defense Council and the Soviet Academy of Sciences, four top Soviet energy officials came to Portland, where they were briefed by Council members and staff and toured energy-efficient buildings. They studied the re-

gion's extensive energy conservation programs and least-cost energy planning strategies. A few weeks later, the Council's chairman and executive director, along with representatives from the California Energy Commission and the Natural Resources Defense Council, visited the Soviet Union to meet with energy planners and other government officials.

In July, West German scientists interested in least-cost planning visited the Council for a staff briefing.

And in August, the Council received a special "conservationist of the year" award from Trout Unlimited, a nationwide organization dedicated to protect and enhance coldwater fish. Trout Unlimited presented the award at its national convention, citing the Council's efforts to conserve trout and salmon and enhance fish habitat.

Ongoing Public Involvement Procedures

Each year, the Council deals with diverse issues. While these issues can be complex, the Council follows the same basic public involvement procedure for each issue.

The chart at the end of this section outlines the steps the Council takes before it makes a final decision and highlights opportunities for public involvement. This schedule describes an issue that will result in an amendment to the Council's power plan or fish and wildlife program. The amendment process is known formally as rulemaking. However, other issues also undergo similar public reviews.

Vehicles for Public Outreach

Many ongoing public involvement activities are aimed at increasing regional understanding of specific aspects of the Council's work and of Northwest power and fish and wildlife issues in general.

Advisory Committees and Work Groups

Several committees, made up of interested parties and experts on key issues, meet regularly to advise the Council. Each advisory committee focuses on a specific current project or issue and develops information and recommendations for the Council. When the issue is decided or the project completed, the advisory committee disbands. New committees form as new activities arise. This allows a number of people with a wide variety of expertise to advise the Council. (See Appendix B for a list of committees for the past year.) Examples of the work these advisory committees have done this year include: analyzing research needs for refining the practice of supplementing natural stocks of fish with hatchery-produced fish; assembling research and demonstration agendas for wind, geothermal and solar resources; and overseeing the system planning work that is going on throughout the Columbia River Basin.

Issue and Briefing Papers

Staff papers are prepared to provide information on topical issues and to solicit comment. An issue paper differs from a briefing paper in that—in addition to presenting information—it calls for Council actions or decisions. While many of these papers are technical, great effort is made to keep them from becoming esoteric. A cover letter explains how the paper fits in with the Council's work, the paper's purpose, and instructions and deadlines for public comment. Acronyms and technical terms used in the paper are explained in footnotes and glossaries. In addition, backgrounders and newsletter stories on the same issues are produced for a lay audience. During the past year, the Council published 38 issue or briefing papers. (See Appendix C for a list.)

Public Liaison

The public involvement division works with the state offices to promote communications with a number of interest groups around the region, including: cities, counties, local government associations, conservation groups, state energy offices and public utility associations. This involves a full range of activities, including initiating contacts, providing information, responding to requests, ad hoc problem solving, participation in meetings and public speaking. An important part of this work is helping local governments implement the Council's model conservation standards for energy efficiency in new, electrically heated buildings.

Public Meetings

The Council meets once a month at locations throughout the Northwest. These meetings, along with the Council's monthly working committee meetings, are open to the public. Representatives from diverse groups are frequently invited to appear to discuss their concerns and viewpoints before the Council at these meetings.

Organization Meetings

Council members and staff frequently attend meetings held by other organizations. These range from annual meetings of utility organizations to weekly meetings of public service clubs. This participation serves two purposes: the members of the organization learn about the Council and the issues it deals with; and the Council gains a clearer understanding of the organization's views.

Mailing List and Direct Mailings

The Council maintains a mailing list that has doubled in six years to more than 24,000 names. This list is being revised in 1989 to allow for targeted direct mailings and to delete those people who no longer desire to receive information from the Council.

Magazine

The bimonthly magazine, Northwest Energy News, has won several awards for excellence. This magazine carries feature stories about issues relevant to the Council's work in easy-to-read, non-technical language. The circulation has grown to more than 22,000.

Newsletter

A monthly newsletter, Update!, carries current events, notice and agendas of Council and advisory committee meetings, notice of rulemakings, deadlines and instructions for comment and a list of all available publications. Its circulation is more than 16,000.

Backgrounders and Fact Sheets

The Council publishes short, non-technical summaries of all major issues. These backgrounders are prepared for each Council meeting agenda item and are available at those meetings. Fact sheets provide expanded information on key issues, particularly issues involving major amendments to the power plan and fish and wildlife program.

Media Information

Comprehensive packets including meeting agendas are sent to members of the media in the vicinity of each Council meeting. Meeting agendas also are mailed to a broader list of Northwest media representatives. Media briefings are held regularly to discuss topical issues with reporting and editorial staffs of newspapers, radio and television stations.

Slide Shows

The public information/involvement staff produces full-color, graphic slides for Council meetings and many other presentations.

Public Library

The Council maintains a public information library at its central office in Portland, Oregon. The library's collection includes Council documents, general reference materials and periodicals on power and fish and wildlife issues.

Films

The Council developed two films explaining the Council's power planning strategies and the region's efforts to rebuild fish and wildlife popula-

tions. Copies on film or video cassette have been given free of charge to libraries, schools and agencies that use the films frequently. Other individuals or groups may borrow the films or tapes on request.

Toll-free Telephone Lines

Toll-free lines are maintained to give citizens in all four Northwest states easy telephone access to the Council and to make it easy for them to order Council publications. ■■

How the Council deals with issues

Month (approximate)	1	2	3	4	5	6	7
Advisory groups discuss the issue. Staff also publishes an issue notice and invites interested parties to consultations.							
Staff develops materials that are distributed to key technical people for an informal review.							
The Council member working committees discuss the issue in open public meetings ①.		1					
Staff presents the issue at Council meeting ② and circulates an issue paper for public comment.			2				
Comment period begins — 30 to 90 days depending on the issue. The Council accepts written comment during entire period and oral testimony at meeting ③.			 3				
Consultations with key groups go on throughout the comment period.							
At a meeting ④, the Council may vote to enter rulemaking. If it does, it authorizes release of the proposed amendment for public comment.				4			
The public comment period begins anew — again for 30 to 90 days depending on the issue. The Council accepts written comment during the entire comment period. Formal hearings are held in each Northwest state (sometimes in connection with the monthly Council meetings ⑤). Consultations with key interest groups also go on throughout the comment period.					 5 		
At a meeting ⑥, the Council may vote to adopt the proposal and amend its power plan or fish and wildlife program.							6

LEGAL ACTIVITIES

For the second year in a row, the Council faced no major litigation. As a result, it continued to encourage cooperative resolution of issues through public discussions and informal negotiations. Because the Northwest Power Act gives the Council broad involvement in both power and fish and wildlife issues, the Council provides a forum for such issues and acts as a catalyst for resolving them.

Rulemakings

From October 1988 through September 1989, the Council conducted six rulemakings, adopting amendments to its power plan and fish and wildlife program. In chronological order of decision, the rulemakings included:

Umatilla Flow Enhancement

The Council amended its fish and wildlife program to conform with the Umatilla Project Act. The amendment implemented a plan developed cooperatively by the Bureau of Reclamation, the Confederated Tribes of the Umatilla Reservation, the Oregon Department of Fish and Wildlife and irrigators in the Umatilla Basin. The plan intends to increase flows on the Umatilla River and restore anadromous fish runs to the basin without injuring the basin's irrigators.

Mainstem Spill Agreement

The Bonneville Power Administration, the Pacific Northwest Utilities Conference Committee, and the region's state and federal fish and wildlife agencies and Indian tribes over 16 months negotiated a long-term agreement on spill at federal dams on the Columbia River. The agreement calls for more water to be released through spillways at certain times of year. That allows juvenile salmon and steelhead to migrate past the dams without going through the turbines.

The agreement covers Lower Monumental, Ice Harbor, John Day, and The Dalles dams and lasts for 10 years. As suitable bypass facilities are con-

structed at each project, the requirement for spill will be phased out.

The Council actively participated in discussions leading to the agreement. An amendment to incorporate the spill agreement into the Council's fish and wildlife program was widely supported.

1989 Supplement to the 1986 Northwest Power Plan

In January 1988, the Council began the process of updating its 1986 Power Plan. The supplement is the first step of this revision. It contains many of the technical underpinnings for the next power plan, including a revised load forecast and a new comprehensive assessment of the cost and availability of conservation and some generating resources.

The supplement amends the 1986 Power Plan, but does not change the resource availabilities or action plan determined in the 1986 plan. Adopting the supplement settled a number of issues that the Council must address in the next power plan. With the supplement, the region can turn its attention to remaining issues—such as the kinds of resources the Northwest needs to meet loads over the next 20 years.

Yakima Phase II Screens

This amendment to the fish and wildlife program includes the design of 53 additional projects to improve fish passage in the Yakima Basin. Construction of those projects will begin after the Council's system planning efforts are completed.

Protected Areas Technical Corrections

The Council amended its protected areas designations (part of its fish and wildlife program) to correct some technical oversights. The amendments also took into account new information about several sites with pending Federal Energy Regulatory Commission (FERC) applications, removing those sites from protected designation.

Commercial Model Conservation Standards

The Council revised its model conservation standards for commercial buildings. The changes update the Council's base code to encourage capture of all cost-effective energy savings.

Wildlife Mitigation

In September 1988, the Council published an issue paper that described decisions the region needs to make regarding wildlife mitigation. The paper also invited public comment on the issue. Those comments have been extensive. The Council held hearings in all four states to give full opportunity for discussion of the issues and those comments. Following these hearings, the Council held three workshops to define the issues further and identify and discuss alternatives. The Council has entered rulemaking on wildlife mitigation (see discussion above).

Other Topics of Importance

A number of major legal issues affecting the power plan or fish and wildlife program are evolving in other forums. The Council intends to participate actively in these issues by contributing comments, offering expertise, and, where appropriate, making available staff members to help address the issues.

Bidding programs to acquire new resources are of particular interest to the Council. The Washington Utilities and Transportation Commission recently adopted the first bidding rule in the Northwest, and Puget Sound Power and Light Company is now evaluating bids received pursuant to this rule. The Commission generously invited the Council to suggest language in the bidding rule that would incorporate protection for critical fish and wildlife resources in the region. The Council greatly appreciated the opportunity to participate in this rulemaking.

Another major initiative regarding bidding for resources is underway at Bonneville, as the agency develops its own resource acquisition process. The Council is involved actively in the work groups that are developing Bonneville's future acquisition process.

Similar rulemakings on bidding for resources likely will begin in the other Northwest states. The Council will offer assistance to the states as they develop these acquisition guidelines so that they reflect as fully as possible the least-cost principles in the region's power plan, include adequate protection for fish and wildlife and pursue conservation as a resource.

A second issue of increasing importance in the region is indoor air quality, including radon. There are a variety of national, state and local efforts underway to improve indoor air quality, set standards for indoor air quality and deal with questions of potential liability relating to indoor air quality.

Indoor air quality was an important issue when the Council developed model conservation standards for residential and commercial buildings. The Council recognized that indoor air quality could have substantial effects on the health and comfort of those within a building, and sought to develop conservation standards that would save energy without compromising indoor air quality.

The Council looks forward to participating in these various efforts to set indoor air quality standards and improve indoor air quality. Any knowledge or experience the Council has acquired in this subject will be made available freely, and Council staff also will be available to offer advice on the most energy-efficient means to achieve given levels of indoor air quality, once the appropriate levels have been determined.

A third major legal issue is the relationship of the Council's fish and wildlife program to the FERC licensing and relicensing processes for hydroelectric projects. The Council will continue to work with the FERC hydro licensing staff, with applicants, with fish and wildlife agencies and Indian tribes to ensure that the hydropower licensing process adequately takes into account the program's measures to protect, mitigate and enhance fish and wildlife.

A number of Northwest utilities already have indicated their willingness to include additional measures to benefit fish and wildlife in their relicensing applications. The Council looks forward to helping them develop measures to protect the ongoing ratepayer investment in fish and wildlife mitigation, and to provide additional benefits to

fish and wildlife, within the framework of an economical and reliable power system.

Government in the Sunshine Act

Section 4(a)4 of the Northwest Power Act provides that the Council is subject, to the extent appropriate, to federal laws that apply to FERC with respect to open meetings.

In general, these laws provide that when a quorum of the Council (five or more members) is present, its deliberations must take place in public. The Council has decided to go well beyond this requirement. It opens to the public all or major portions of meetings of both its power and fish and wildlife committees, regardless of whether a quorum of Council members is present. Thus, those interested in issues taken up by the Council can observe both its formal deliberations and its preliminary working sessions.

The following summary is supplied to Congress in compliance with the open meetings policy of the Council and Section 4(g) of the Government in the Sunshine Act. Between October 1, 1988, and September 30, 1989, the Council conducted 13 meetings as a full body, and approximately 22 meetings of its power and fish and wildlife committees. Portions of the following meetings, at which a quorum of Council members was present, were closed pursuant to one or more of the Sunshine Act exceptions:

September 14-15, 1988 Boise, Idaho	internal personnel matters; civil litigation
October 12-13, 1988 Missoula, Montana	internal personnel matters
November 3-4, 1988 Portland, Oregon	internal personnel matters
November 9-10, 1988 Spokane, Washington	internal personnel matters
December 14-15, 1988 Portland, Oregon	premature disclosure
March 8-9, 1989 Missoula, Montana	civil litigation
April 11, 1989 Salem, Oregon	internal personnel matters
April 26, 1989 Portland, Oregon	internal personnel matters
May 9, 1989 Sun Valley, Idaho	premature disclosure
May 24, 1989 Portland, Oregon	proprietary information premature disclosure
June 13-14, 1989 Seattle, Washington	civil litigation; premature disclosure
July 12-13, 1989 Whitefish, Montana	premature disclosure



ADMINISTRATIVE ACTIVITIES

The Council's work is performed, depending on the tasks, either by its central staff or public agencies and Indian tribes under intergovernmental agreements. It also uses consultants under contract on a limited basis. The Council additionally turns to advisory committees for help on certain aspects of the Northwest Power Plan and the Columbia River Basin Fish and Wildlife Program.

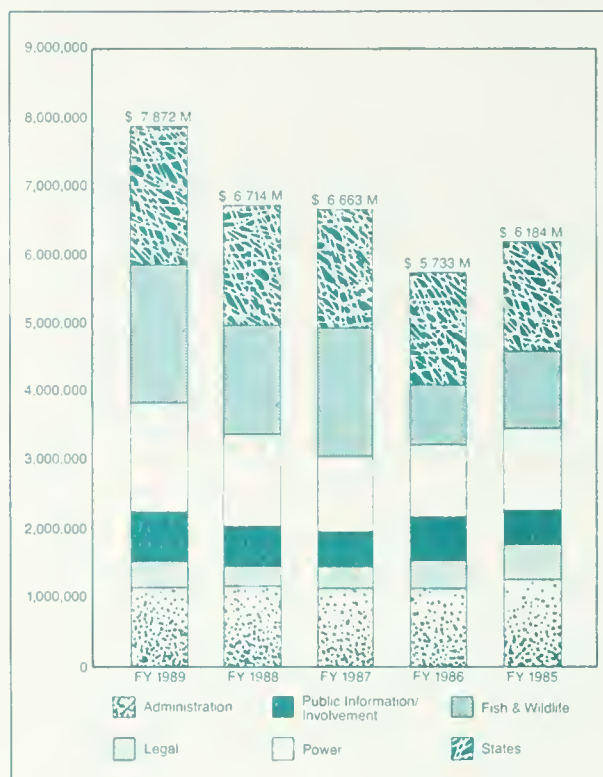
The Council's central staff of 43 people is located in Portland, Oregon. The staff evaluates energy and fish and wildlife matters that come before the Council. In addition, the central office staff supports the Council's public information and involvement efforts, assists its involvement in congressional issues and provides legal and administrative services. This staff also assists the four state Council offices and Council members in carrying out each state's responsibilities under the Act.

Budget

During Fiscal Year 1989, the Council reviewed the technical basis for the 1986 Power Plan, monitored implementation of the Columbia River Basin Fish and Wildlife Program and continued the salmon and steelhead production planning effort, initiated in 1987, for 31 subbasins in the Columbia River system. The Council expects to underspend its budget of \$7,872,000 by approximately \$250,000.

The largest expenditure categories in Fiscal Year 1989 were for the operations of the central and state staffs supporting the Council members and for fish and wildlife planning contracts. (The Fiscal Year 1988 Audit is reproduced in Appendix E, and is available on request from the Council's central office.)

Northwest Power Planning Council
Annual Budgets



In August 1989, the Council presented to the Bonneville Power Administration its Fiscal Year 1991 and revised Fiscal Year 1990 budgets. The Council's budget for Fiscal Year 1990 is \$7,245,000. This will include major expenditures in the Columbia River Basin Fish and Wildlife Program to complete subbasin planning.

Budget projections assume continuing efforts to monitor the implementation of both the fish and wildlife program and the power plan and possible amendments to either, as new information from the implementation activities is evaluated. The budget was made available for public review and comment and is expected to be submitted to Congress by the President early in 1990 as part of Bonneville's budget submittal. Copies of the Council's budget are available on request. ■■

COUNCIL MEMBER BIOGRAPHIES

R. Ted Bottiger

(Washington, appointed 1987)

Bottiger was the majority leader in the Washington State Senate from 1983 to 1987 and the minority leader from 1981 to 1982. Prior to that, he was the chairman of the Senate's energy and utilities committee. He represented southern Pierce County and northeastern Thurston County in both the Senate (from 1973 to 1987) and in the House of Representatives (from 1965 to 1972). Bottiger is an attorney and a partner in the Tacoma firm of Counsell, Murphy and Bottiger.

John Brenden

(Montana, appointed 1989)

Brenden was the co-chairman of Stan Stephens' successful campaign for governor in 1988. He also chaired Governor Stephens' transition team after the election. Brenden was the Montana Republican Party chairman from 1983 through 1987 and served as the finance chairman for Congressman Ron Marlenee's campaign in 1976. Brenden and his wife operate a wheat ranch in Scobey, Montana, and have real estate interests in the Flathead Valley. They own a home at Ashley Lake, west of Kalispell.

James Goller

(Idaho, vice chairman, appointed 1987)

Goller spent six years as chief of staff for Idaho's Senator James McClure prior to being appointed to the Council. In 1966, he managed McClure's first campaign for U.S. representative for Idaho's 1st Congressional District and has been a member of McClure's staff since then. As chief of staff, Goller managed McClure's Idaho offices and supervised the senator's Washington, D.C., staff, including staff members of the U.S. Senate Committee on Energy and Natural Resources and the U.S. Senate Committee on Appropriations.

Stan Grace

(Montana, appointed 1989)

Grace has been the logging manager at Stoltze-Conner Lumber Company in Darby, Montana, for almost 15 years. Prior to 1972, he managed the Madison Fork Guest Ranch near Yellowstone National Park. Grace was a trustee of the Ravalli County Electric Cooperative Inc., from 1983

through 1988, and has served as an officer with various hunting and fishing groups.

Ted Hallock

(Oregon, appointed 1988)

Hallock was an Oregon state senator from 1963 to 1983. During this period, he served as senate majority leader and as chairman of the senate committees on energy and the environment, land-use, human resources and housing. Hallock's legislative activities focused on statewide land-use planning, environmental quality, tax reform and health care. He co-authored Oregon's innovative 1973 land use bill. In addition, Hallock has operated a public relations firm in Portland since 1959.

Norma Paulus

(Oregon, appointed 1987)

Paulus, a Salem, Oregon lawyer, served as secretary of state in Oregon from 1977 to 1985. When elected in 1976, she was the first woman in Oregon history to win a statewide election. In 1986, Paulus was her party's nominee for state governor. From 1971 to 1977, she represented Marion County for three terms in the Oregon legislature. Paulus was an appellate lawyer before entering public service.

Robert W. Saxvik

(Idaho, appointed 1981)

Saxvik was chief of staff for Idaho Governor John Evans, and vice president and general manager of KBAR radio in Burley, Idaho. Saxvik served three terms in the Idaho State Senate where he was assistant senate minority leader. He was legislative liaison to the governor from 1977 to 1978 and director of the Office of Aging in 1978.

Tom Trulove

(Washington, chairman, appointed 1985)

Trulove has been a professor of economics at Eastern Washington University since 1969 and is currently taking a leave of absence. He was mayor of the City of Cheney from 1978 to 1985. Active in the Association of Washington Cities, he served as a member of several of its committees and was president of the Association from 1984 to 1985. During development of the 1983 Power Plan, he was vice chairman of the Council's forecasting advisory committee. ■■

REGIONAL ENERGY CONSUMPTION STATISTICS

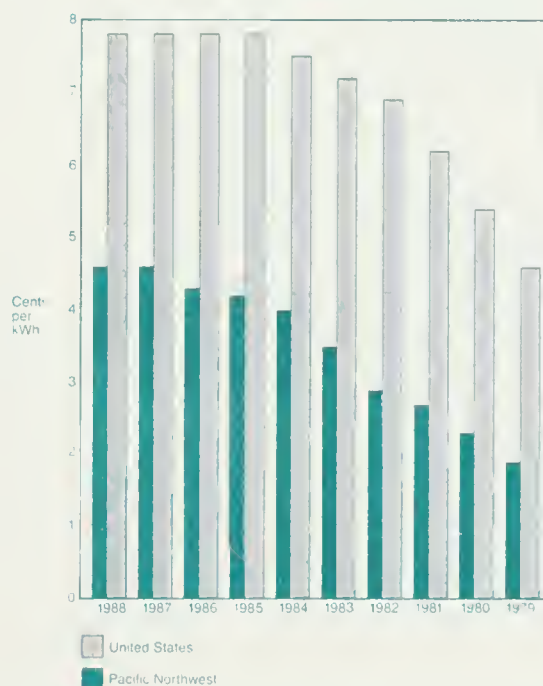
	1988	1987	1986	1985
Thousands of customers				
Residential	3,544	3,490	3,431	3,363
Commercial	455	433	427	422
Industrial	11	10	10	10
Irrigation and other	54	69	68	70
Total	4,063	4,002	3,936	3,865
Electricity consumption (million kilowatt-hours)				
Residential	48,539	46,174	47,041	49,582
Commercial	32,175	30,932	29,933	29,723
Industrial	63,019	57,544	53,795	55,302
Irrigation and other	6,850	6,535	6,220	6,579
Total	150,584	141,185	136,989	141,185
Per capita consumption (kilowatt-hours per person)				
Region	17,381	16,550	16,247	16,828
United States	10,423	10,067	9,726	9,719
Average residential rates (cents per kilowatt-hour)				
Region	4.6	4.6	4.3	4.2
United States	7.8	7.8	7.8	7.8

Electricity Use per Person



1984	1983	1982	1981	1980	1979
3,313	3,285	3,238	3,198	3,128	3,027
411	392	385	381	369	360
11	11	11	10	10	10
68	67	67	66	66	68
3,802	3,755	3,701	3,655	3,573	3,465
47,812	45,184	48,469	46,524	47,838	48,390
28,242	26,262	26,131	25,457	24,843	24,607
59,481	53,252	52,464	61,854	59,542	60,996
5,773	5,606	6,193	6,640	6,027	6,789
141,308	130,384	133,258	140,546	138,250	140,782
17,008	15,849	16,236	17,229	17,273	18,068
9,637	9,161	8,973	9,330	9,196	9,203
4.0	3.5	2.9	2.7	2.3	1.9
7.5	7.2	6.9	6.2	5.4	4.6

Average Residential Rates



Data compiled by Northwest Power Planning Council and the Bonneville Power Administration. Statistics represent consumption in Idaho, Oregon, Washington and western Montana. Sum of components may differ slightly from totals due to rounding.

COUNCIL STAFF

State

IDAHO

James Goller, Vice Chairman
Robert Saxvik, Council Member
Karen Nelson, Public Involvement Director
Phil Welker, Energy Policy Analyst
Carol Brown, Administrative Secretary
Connie Cook, Receptionist

MONTANA

John Brenden, Council Member
Stan Grace, Council Member
Terri Wilner, Administrative Officer
John Hines, Economist
Marianne Knoy, Administrative Secretary

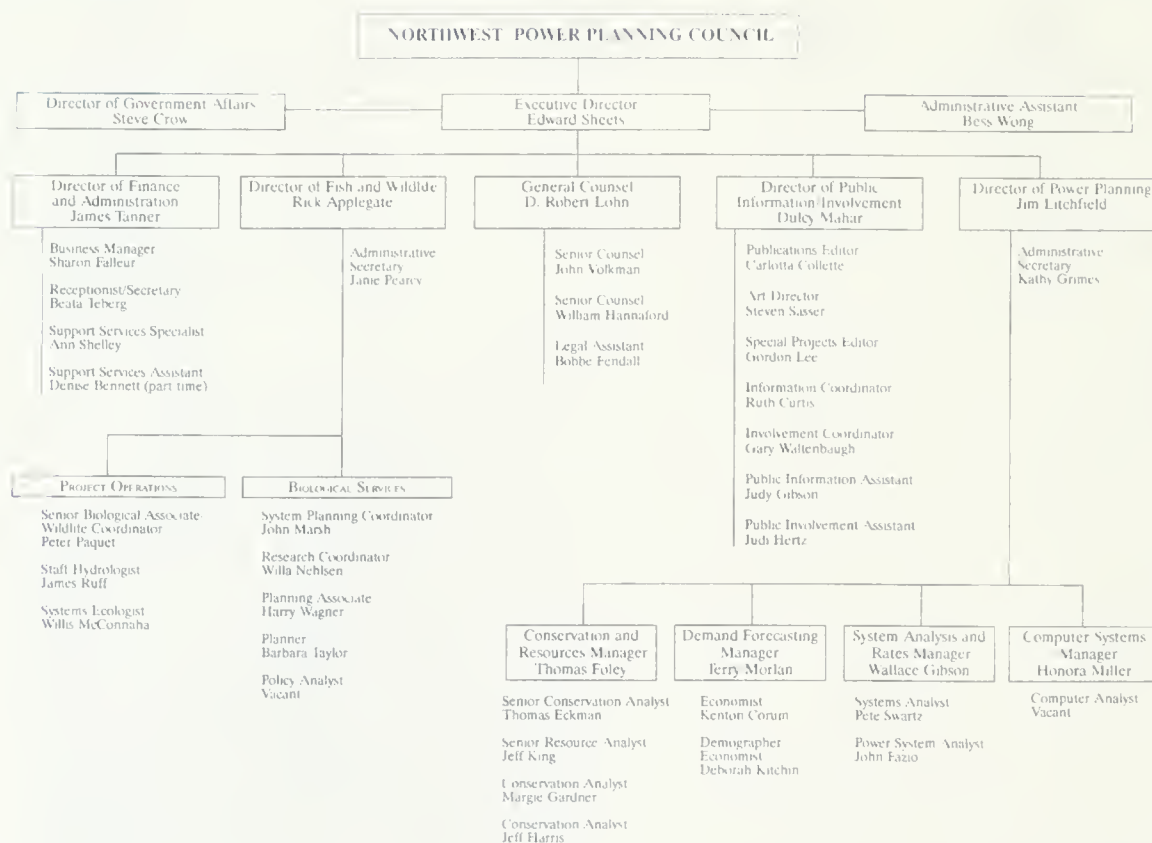
OREGON

Ted Hallock, Council Member (Portland)
Norma Paulus, Council Member (Salem)
Diane Walton, Policy Advisor (Portland)
Roby Roberts, Assistant to Ted Hallock (Portland)
Sharon Toland, Assistant to Norma Paulus (Salem)

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Tom Trulove, Chairman (Cheney)
Andre L'Heureux, Energy Policy Specialist (Olympia)
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List of Appendices

Below is a list of appendices referenced in this annual report. To obtain them, contact the Council's Public Information and Involvement Division, located in the central office.

- Appendix A** Agendas of Council Meetings
- Appendix B** Advisory Committees
- Appendix C** Documents Made Available to the Public in Fiscal Year 1989
- Appendix D** Selected Newspaper and Magazine Articles About the Council
- Appendix E** Fiscal Year 1988 Annual Audit
- Appendix F** Comments on the Draft Ninth Annual Report

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